Service Manual

TAD-2000 COMPACT DISC DIGITAL AUDIO PLAYER

COMPACT disc DIGITAL AUDIO

Specifications

Dimensions	width 433 mm	
	height 146 mm	
	depth 309 mm	
Weight	7.4 kg	

		Nominal	Limit
Frequency response 20 to 20,000 Hz		±0.5 dB	±1 dB
Signal-to-noise ratio		90 dB	85 dB
Dynamic range		90 dB	85 dB
Channel separation 1 kHz		90 dB	85 dB
THD 80 kHz filtered		0.005%	0.01%
Wow and flutter		Equivalent to crystal quartz	
Audio output level 100% modulation		2V	2 to 2.5V
Power supply		220V 50 Hz	±10%
Power consumption		30W	±10%
Operating temperature range		25°C	5 to 40°C
Test condition	power supply	As shown above	
	temperature	25°C	
	OUTPUT load impedance	50K ohm	
	test compact disc	YEDS-2/3/4/5 SONY	

TENSAI

Fehler:
Hauptteil wird nicht erkannt
Laser mechanisch justieren, mit Imbusschlüssel
Signal muß gut erkennbar sein

Alignment procedure

APC circuit
Initially rotate RV101 clockwise fully. Position power meter sensor at pick-up lens. Put the sensor at such position and angle that provide maximum power meter reading. Adjust RV101 slowly counterclockwise for 0.3 mW.
Important. Use care not to exceed 0.32 mW. Even a momentary excess of the light output beyond this wattage shall be avoided.

Note before proceeding to the next adjustment
Turn unit power on. Press PLAY/START button. Press FF button once for a duration shorter than 0.5 second. This causes unit to cease RF search and allows laser emission without RF signal.

Forward motor off-set adjustment
Turn power on and operate unit as stated above. Adjust RV505 for 0V ± 25 mV at test point TP502.

Disc drive motor bias adjustment
Load disc. Adjust RV503 for 1.2V ± 0.1V at #4 terminal of IC U502 (disc motor drive output). After completion, verify that motor revolves.

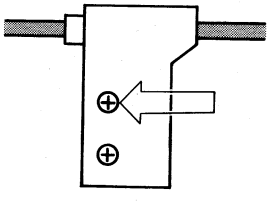
Focus final stage off-set adjustment
Press STOP button to stop focus search. Allow 20 seconds after focus search has ceased. Adjust RV107 for 0V ± 50 mV at test point TP103.

Radial final stage off-set adjustment
Adjust RV113 for 0V ± 25 mV at test point TP111.

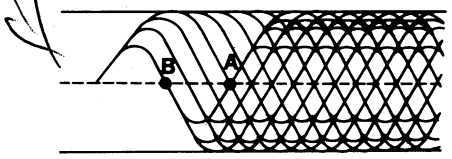
Sampling pulse output check
Load disc. Connect synchroscope to test points TP106 and then TP107. Check pulse signal is observed at both test points. If necessary adjust RV108 and RV114 respectively.

Focus circuit adjustment
Connect dual-trace synchroscope across test points TP101 and TP102. Again adjust RV107 for 0V ± 100 mV and simultaneously for a vertically symmetric display.

Zero setting adjustment for pick-up head forcus output
Adjust the upper screw on the back side of head for 0V ± 25 mV at test point TP103.

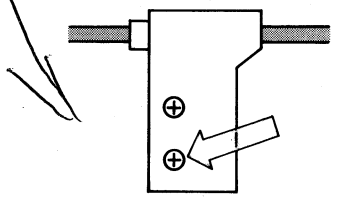


Sampling pulse timing
Connect synchroscope to test point TP106 to observe RF signal. Adjust RV114 so that pulse output timing coincides with the cross point A of RF signal as shown below.

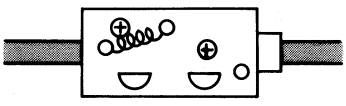


Perform the same procedure on TP107 except adjusting RV108. See point B above for the adjustment on TP107.

RF signal phase adjustment
Adjust the lower screw on the back side of laser pick-up head for correctly phased RF signal display.



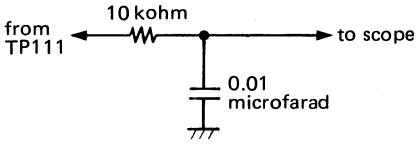
Pick-up head RF balance and DL balance adjustment
Use REV button to lead the laser head to the lead-in area of the disc (until TRACK NO indicator shows '0'). Connect dual-trace scope to TP104 and TP105. Adjust the screws at the top of the pick-up head for minimum scope display. Then adjust RV104 for minimum scope display. Repeat above adjustments several times.

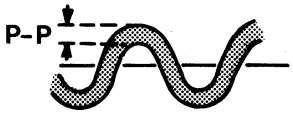


Radial balance adjustment
Connect dual-trace synchroscope to TP108 and TP109. Adjust RV111 so that displays coincide with each other.

RF signal adjustment
Connect synchroscope to TP104. Adjust RV105 and RV106 for clear RF signal display.

Radial level adjustment
Connect scope through a 10 kohm resistor and a 0.01 microfarad capacitor to test point TP111. Rotate RV506 counter-clockwise fully. Adjust RV112 for 0.6 Vp-p when a searching ends.





Normal radial gain setting
Press PLAY/START button. Adjust RV506 for 0.3 Vp-p at OUTPUT jacks.

Searching radial gain adjustment
Short across C570. This sets unit to constant searching mode. Adjust RVZ01 for 0.1 Vp-p output at OUTPUT jacks.

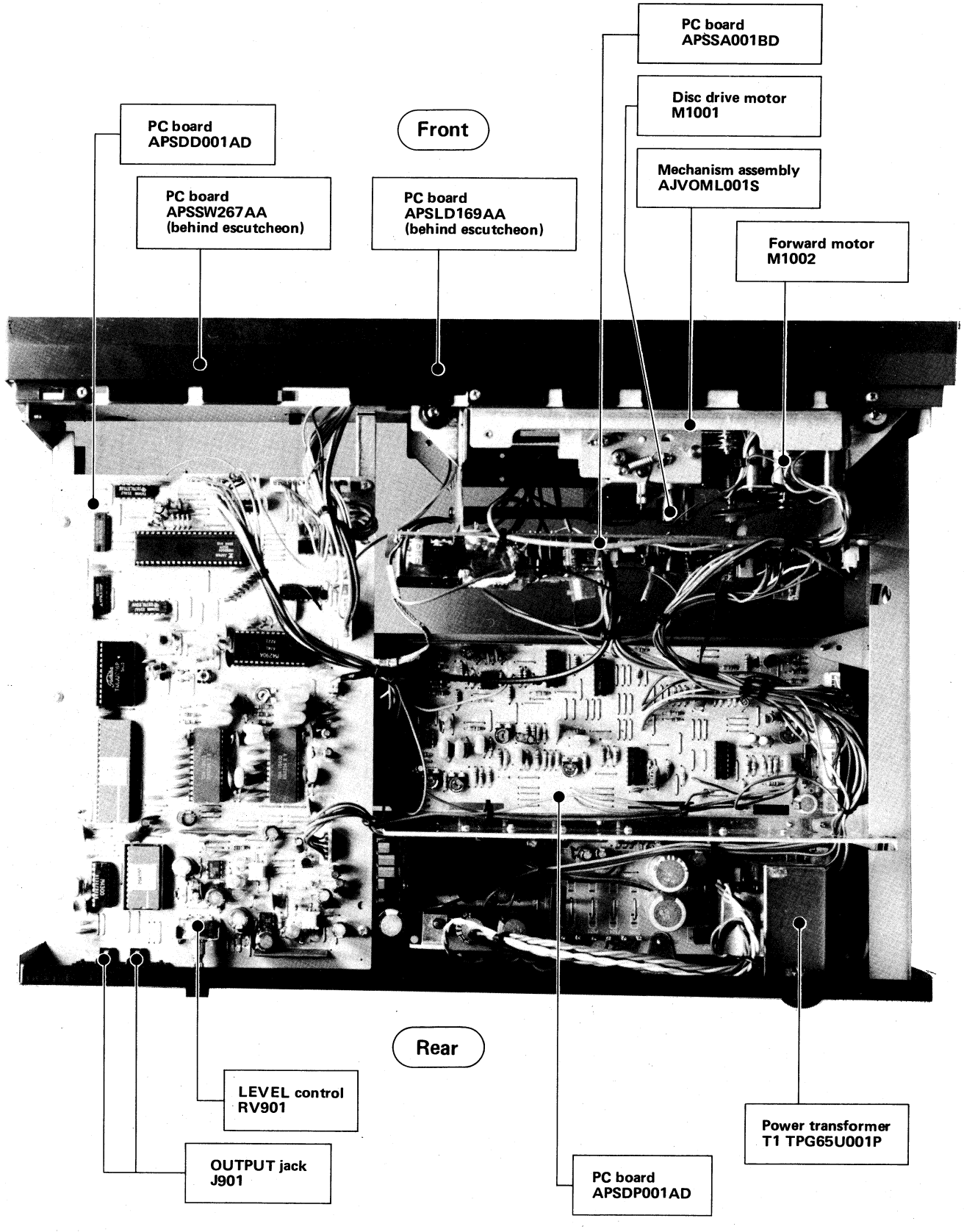
Forward gain adjustment
Adjust RV504 for smooth, non-cocking motor revolution.

Disc motor drive circuit adjustment
1 Rotate RV502 clockwise fully. Adjust RV503 so that TRACK TIME indicator commences registering time and output signal is delivered. Rotate RV502 counterclockwise fully to lock up motor. Adjust synchroscope display so that point A of the picture in **Sampling pulse timing** section moves to the center of Y-axis. Again rotate RV502 clockwise fully and readjust RV503. Adjust L901 for 5V at TP901.
2 Observe scope connected to test point TP501 (MCES). Adjust RV501 for 50% duty of the display. Verify that test point TP901 is 5V.

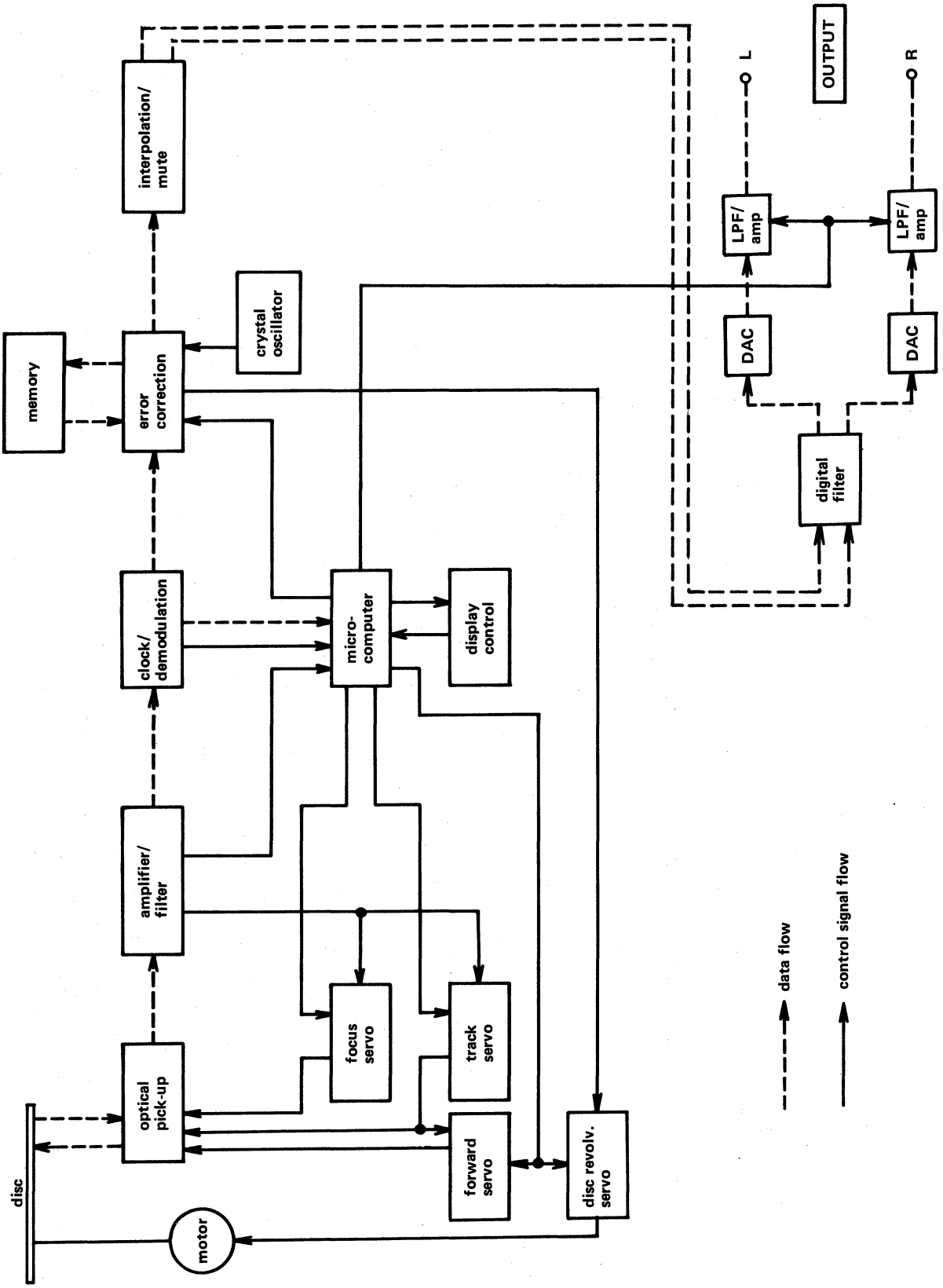
Audio signal balance adjustment
Play with 1 kHz L-R signal on test disc. Adjust RV901 for channel balance tolerance less than 0.1V at the output.

DANGER – INVISIBLE LASER RADIATION WHEN OPENED AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.

Chassis layout

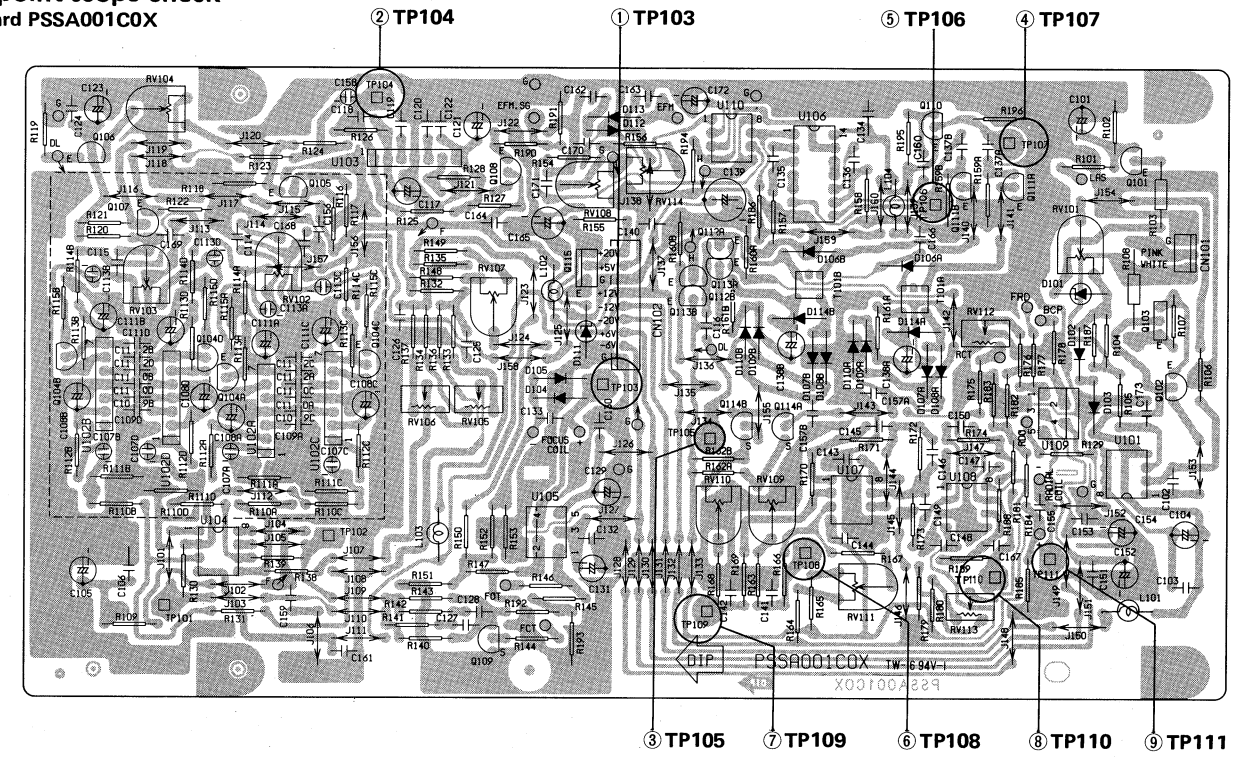


Functional block diagram

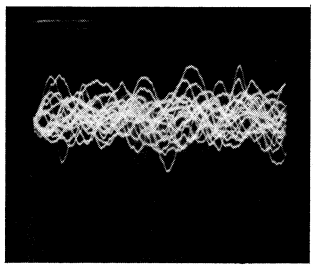


Test point scope check

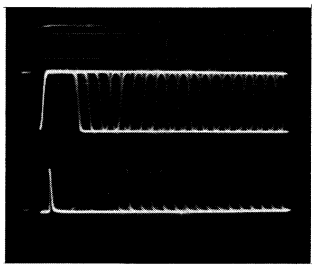
PC board PSSA001C0X



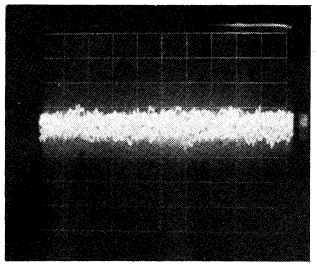
① TP103 (0.1msec/div. 50mV/div.)



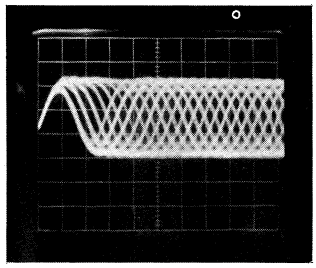
④ TP107 (0.5μsec/div. 0.1V/div.)



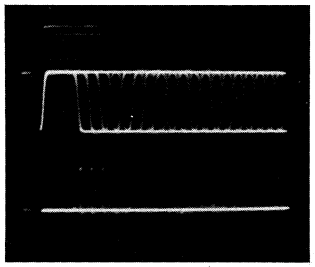
⑧ TP110 (1msec/div. 5mV/div.)



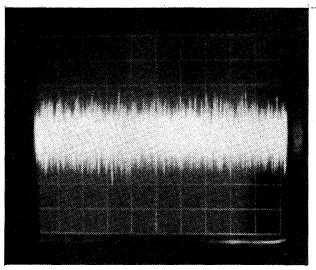
② TP104 (0.5μsec/div. 5mV/div.)



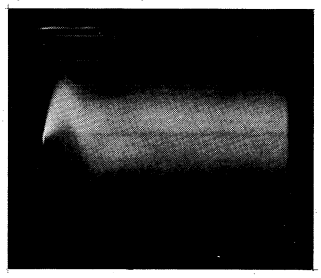
⑤ TP106 (0.5μsec/div. 0.1V/div.)



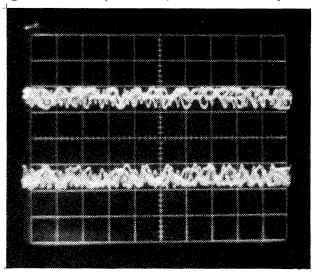
⑨ TP111 (0.5msec/div. 20mV/div.)



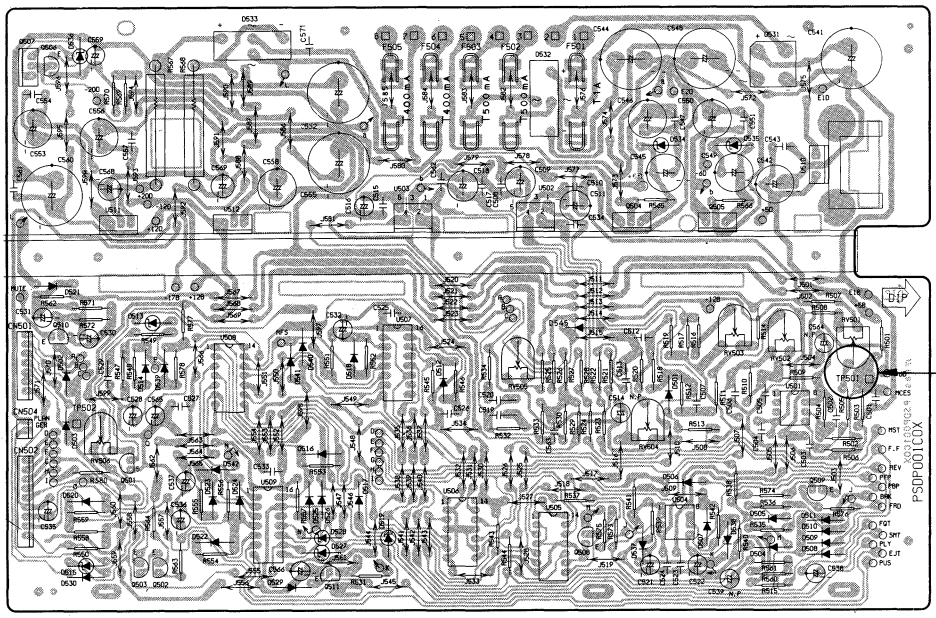
③ TP105 (0.5μsec/div. 5mV/div.)



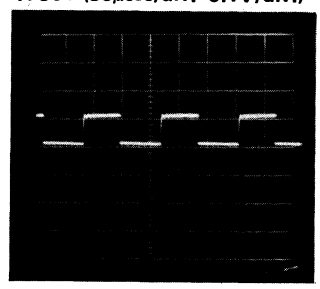
⑥ TP108 (2msec/div. 20mV/div.) upper
⑦ TP109 (2msec/div. 20mV/div.) lower



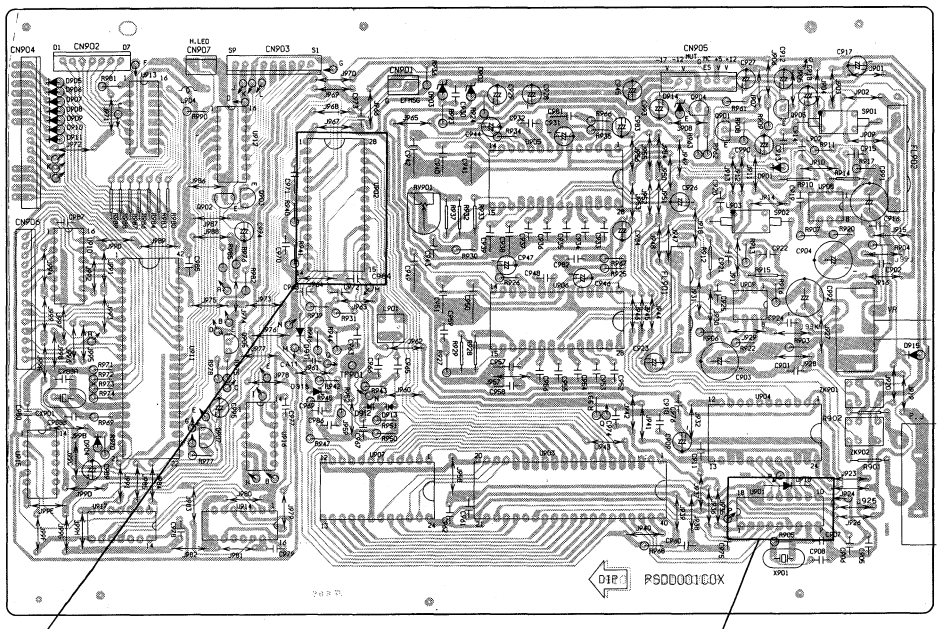
Test point scope check
PC board PSDP001C0X



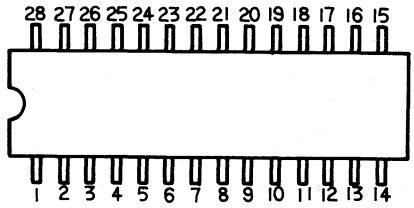
TP501 (50μsec/div. 0.1V/div.)



6 **PC board PSDD001C0X (See next page)**

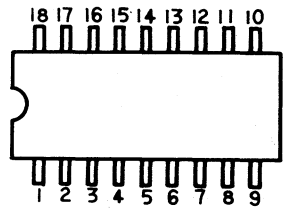


U902
SAA7010



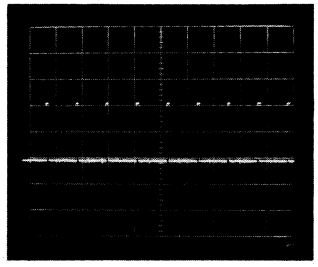
top view

U901
SAA7000



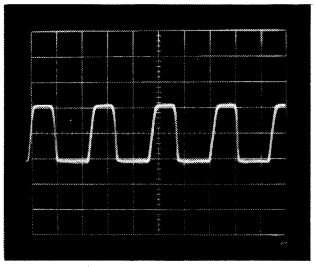
top view

Pin 11 (5μsec/div. 0.2V/div.)



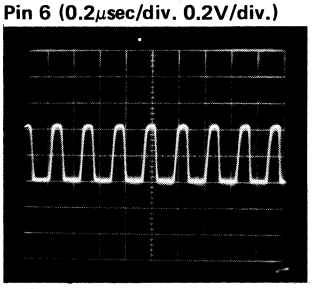
U901
SAA7000
(M4300)

Pin 14 (0.2μsec/div. 0.2V/div.)



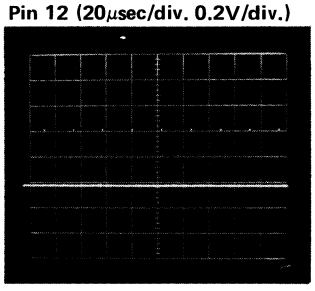
U901
SAA7000
(M4300)

Pin 6 (0.2μsec/div. 0.2V/div.)



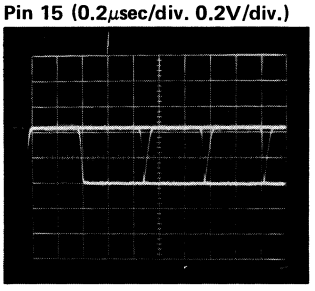
U904
SAA7030
(M4550)

Pin 12 (20μsec/div. 0.2V/div.)



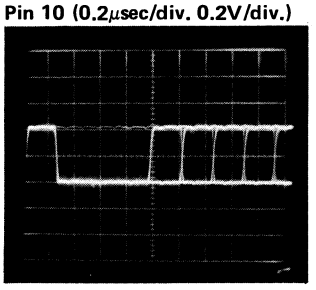
U901
SAA7000
(M4300)

Pin 15 (0.2μsec/div. 0.2V/div.)



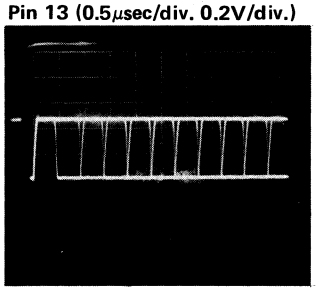
U901
SAA7000
(M4300)

Pin 10 (0.2μsec/div. 0.2V/div.)



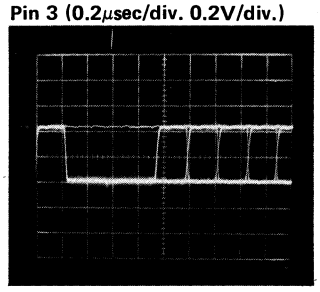
U904
SAA7030
(M4550)

Pin 13 (0.5μsec/div. 0.2V/div.)



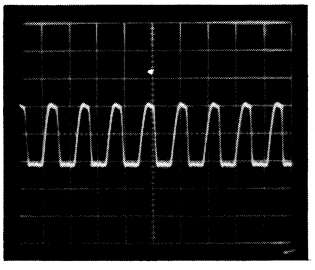
U901
SAA7000
(M4300)

Pin 3 (0.2μsec/div. 0.2V/div.)



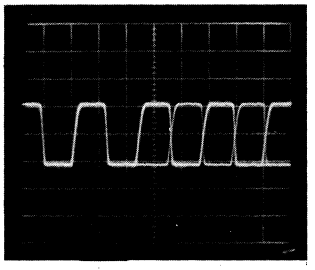
U904
SAA7030
(M4550)

Pin 22 (0.2μsec/div. 0.2V/div.)



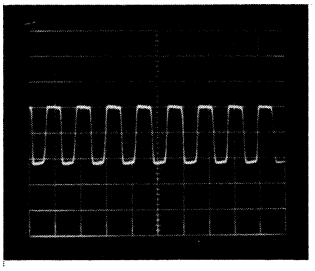
U902
SAA7010
(M4290A)

Pin 26 (0.2μsec/div. 0.2V/div.)



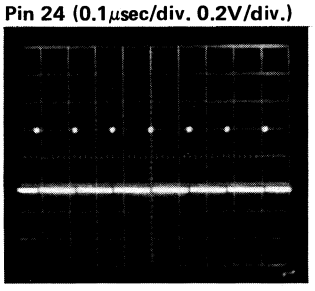
U902
SAA7010
(M4290A)

Pin 23 (0.2μsec/div. 0.2V/div.)



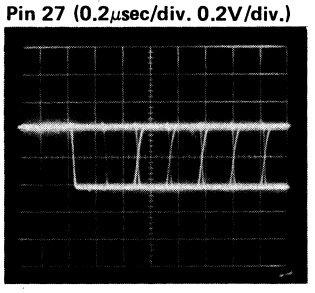
U903
SAA7020
(M4280)

Pin 24 (0.1μsec/div. 0.2V/div.)



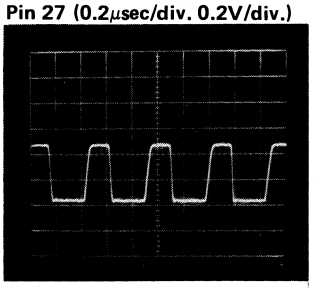
U902
SAA7010
(M4290A)

Pin 27 (0.2μsec/div. 0.2V/div.)



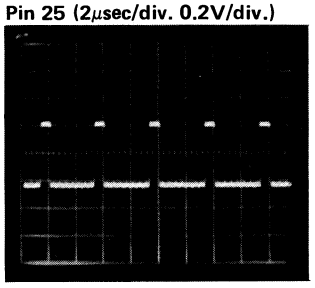
U902
SAA7010
(M4290A)

Pin 27 (0.2μsec/div. 0.2V/div.)



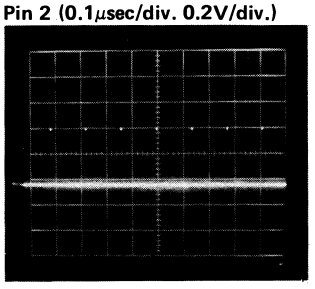
U903
SAA7020
(M4280)

Pin 25 (2μsec/div. 0.2V/div.)



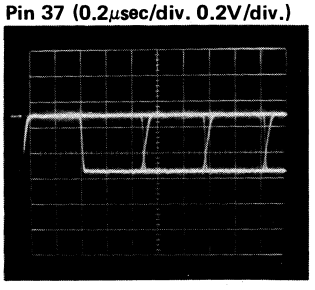
U902
SAA7010
(M4290A)

Pin 2 (0.1μsec/div. 0.2V/div.)



U903
SAA7020
(M4280)

Pin 37 (0.2μsec/div. 0.2V/div.)

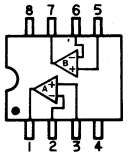


U903
SAA7020
(M4280)

Semiconductor basing information

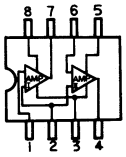
All ICs top view except those side viewed.

U101, U104, U107, U108, U501, U504: NJM4558D



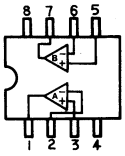
1 A OUTPUT
2 A− INPUT
3 A+ INPUT
4 V−
5 B+ INPUT
6 B− INPUT
7 B OUTPUT
8 V+

U110: LA1222



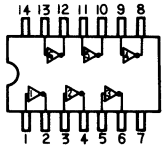
1 Amp I INPUT
2 BIAS
3 G
4 Amp II OUTPUT
5 Amp II OUTPUT (Vcc)
6 Amp II INPUT
7 Amp I OUTPUT
8 Vcc

U908, U909: TL072 (NJM4556)



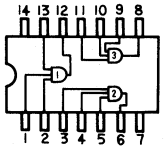
1 A OUTPUT
2 A− INPUT
3 A+ INPUT
4 Vcc−
5 B+ INPUT
6 B− INPUT
7 B OUTPUT
8 Vcc+

U106, U916: SN74LS04N



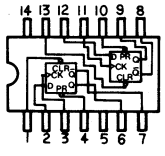
1 1 INPUT
2 1 OUTPUT
3 2 INPUT
4 2 OUTPUT
5 3 INPUT
6 3 OUTPUT
7 GND
8 4 OUTPUT
9 4 INPUT
10 5 OUTPUT
11 5 INPUT
12 6 OUTPUT
13 6 INPUT
14 Vcc

U917: SN74LS11N



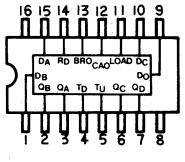
1 1 INPUT
2 1 INPUT
3 2 INPUT
4 2 INPUT
5 2 INPUT
6 2 OUTPUT
7 GND
8 3 OUTPUT
9 3 INPUT
10 3 INPUT
11 3 INPUT
12 1 OUTPUT
13 1 INPUT
14 Vcc

U915: SN74LS74N



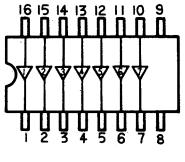
1 1 CLR
2 1D
3 1CK
4 1PR
5 1Q
6 1Q
7 GND
8 2Q
9 2Q
10 2PR
11 2CK
12 2D
13 2CLR
14 Vcc

U914: M74LS193P



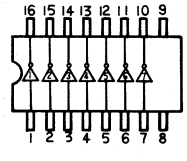
1 D_B
2 Q_B
3 Q_A
4 T_D
5 T_U
6 Q_C
7 Q_D
8 GND
9 D_D
10 D_C
11 $\overline{LOAD}$
12 $\overline{CAO}$
13 $\overline{BRO}$
14 R_D
15 D_A
16 Vcc

U913: BA618



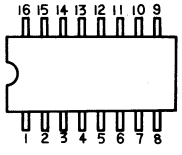
1 1 OUTPUT
2 2 OUTPUT
3 3 OUTPUT
4 4 OUTPUT
5 5 OUTPUT
6 6 OUTPUT
7 7 OUTPUT
8 Vcc
9 GND
10 7 INPUT
11 6 INPUT
12 5 INPUT
13 4 INPUT
14 3 INPUT
15 2 INPUT
16 1 INPUT

U912: M54517P



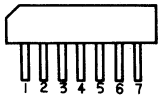
1 1 INPUT
2 2 INPUT
3 3 INPUT
4 4 INPUT
5 5 INPUT
6 6 INPUT
7 7 INPUT
8 GND
9 NC
10 7 OUTPUT
11 6 OUTPUT
12 5 OUTPUT
13 4 OUTPUT
14 3 OUTPUT
15 2 OUTPUT
16 1 OUTPUT

U910: TC4028BP



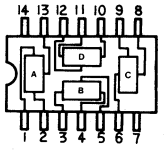
1 Q_4 OUTPUT
2 Q_2 OUTPUT
3 Q_0 OUTPUT
4 Q_7 OUTPUT
5 Q_9 OUTPUT
6 Q_5 OUTPUT
7 Q_6 OUTPUT
8 Vss
9 Q_8 OUTPUT
10 A INPUT
11 D INPUT
12 C INPUT
13 B INPUT
14 Q_1 OUTPUT
15 Q_3 OUTPUT
16 V_{DD}

U102(A~D), U103: TA7302P



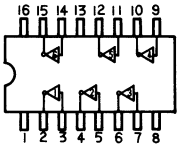
1 + INPUT
2 − INPUT
3 BIAS
4 GND
5 FILTER
6 OPEN COLLECTOR OUTPUT
7 Vcc

U505, U506: TC4066BP



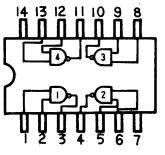
1 A IN/OUT
2 A OUT/IN
3 B OUT/IN
4 B IN/OUT
5 B C_{IN}
6 C C_{IN}
7 Vss
8 C IN/OUT
9 C OUT/IN
10 D OUT/IN
11 D IN/OUT
12 D C_{IN}
13 A C_{IN}
14 Vcc

U507, U509: TC409UBP



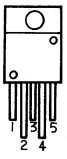
1 Vcc
2 1 OUTPUT
3 1 INPUT
4 2 OUTPUT
5 2 INPUT
6 3 OUTPUT
7 3 INPUT
8 Vss
9 4 INPUT
10 4 OUTPUT
11 5 INPUT
12 5 OUTPUT
13 NC
14 6 INPUT
15 6 OUTPUT
16 V_{DD}

U508: TC4011BP



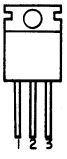
1 1 INPUT
2 1 INPUT
3 1 OUTPUT
4 2 OUTPUT
5 2 INPUT
6 2 INPUT
7 Vss
8 3 INPUT
9 3 INPUT
10 3 OUTPUT
11 4 OUTPUT
12 4 INPUT
13 4 INPUT
14 V_{DD}

U105, U109, U502, U503: μPC1238V



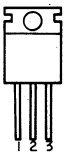
1 INPUT
2 NFB
3 −Vcc
4 OUTPUT
5 +Vcc

U510: μA7805UC
U511: μA7812UC



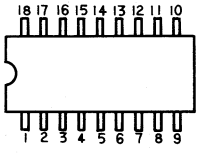
1 INPUT
2 COMMON
3 OUTPUT

U512: μA7912UC



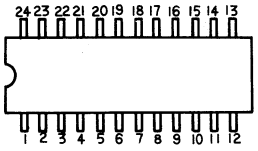
1 COMMON
2 INPUT
3 OUTPUT

U901: SAA7000 (M4300)



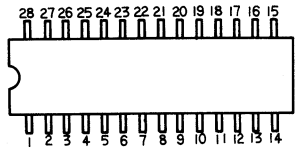
1 VBB
2 FSEC
3 CLEC
4 DAEC
5 UNEC
6 CLOX
7 XTAL2
8 XTAL1
9 VSS
10 VDD2
11 STR2
12 STR1
13 DLCF
14 CLCF
15 DRCF
16 14/16
17 TEST
18 VDD1

U904: SAA7030 (M4550)



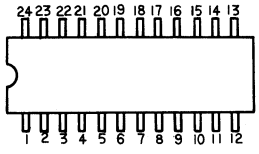
1	VBB	13	VDD2
2	OS	14	NC
3	DLFD	15	TINR
4	NC	16	TINL
5	NC	17	DRCF
6	CLFD	18	CLCF
7	LAT	19	CLOX
8	NC	20	DLCF
9	NC	21	STR1
10	DPFD	22	RT
11	OB	23	TE
12	VSS	24	VDD1

U902: SAA7010 (M4290)



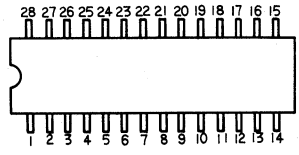
1	VBB	15	VDD2
2	SDATA	16	OA1
3	SBCL	17	OA2
4	SWCL	18	OA3
5	P	19	VSS (ANAL)
6	HFD	20	VCO1
7	HF1	21	VCO2
8	HF1	22	CEFM
9	FB	23	FD
10	FB	24	FSDE
11	DEFM	25	SSDE
12	PD2	26	CLDE
13	PD1	27	DADE
14	VSS (DIG)	28	VDD1

U907: TMM2016P-2



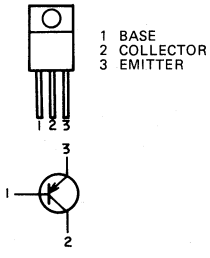
1	A7	13	I/O4
2	A6	14	I/O5
3	A5	15	I/O6
4	A4	16	I/O7
5	A3	17	I/O8
6	A2	18	CS
7	A1	19	A10
8	A0	20	OE
9	I/O1	21	WE
10	I/O2	22	A9
11	I/O3	23	A8
12	GND	24	Vcc

U905 / U906: TDA1540

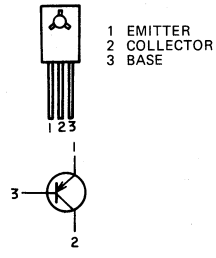


1	DATA INPUT	15	CURRENT R
2	LATCH	16	CURRENT R
3	VOLT R	17	CURRENT R
4	V_1^+	18	DECOUP C
5	FCA	19	DECOUP C
6	GROUND	20	DECOUP C
7	V_1^-	21	DECOUP C
8	OSC C	22	AF OUT
9	OSC C	23	DECOUP C
10	VOLT R	24	DECOUP C
11	V_2^-	25	DECOUP C
12	DECOUP C	26	VOLT R
13	DECOUP C	27	VOLT R
14	DECOUP C	28	CLOCK IN

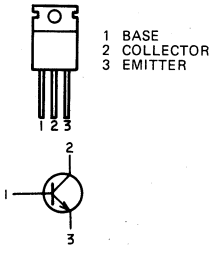
Q505 / Q507: 2SA768



Q103: 2SA794

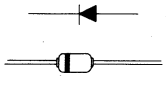


Q115 / Q504: 2SD313

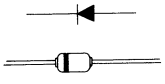


D101: MA1082
D536: MA1180M

D102, D103, D106(A-B), D107(A-B), D108(A-B), D109(A-B), D110(A-B), D112, D113, D501, D504, D505, D506, D507, D508, D509, D510, D511, D512, D514, D516, D517, D518, D520, D521, D522, D523, D524, D525, D526, D529, D530, D537, D538, D539, D540, D541, D542, D901, D904, D905, D906, D907, D908, D909, D910, D911, D915 } MA150

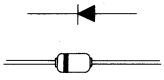


D104, D105, D502, D503: EM1Z



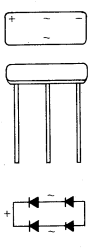
D903: RD2-4EC
D513, D515, D519, D527, D528, D902, D914: RD5.1EB1

D534 / D535: RD6.8EB2
D111: RD15EB1

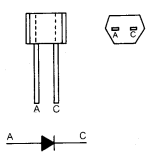


D531: S2VB

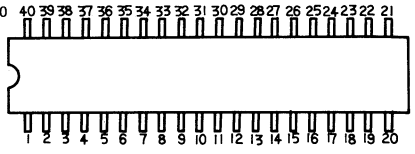
D532 / D533: S1RBA20



D912 / D913: SVC321SP

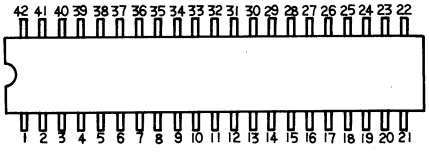


U903: SAA7020 (M4280)



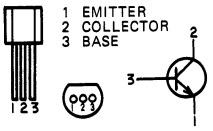
1	VBB	11	A2ER	21	VDD2	31	D4ER
2	FSEC	12	A3ER	22	TEST	32	D3ER
3	C1 FLAG	13	A4ER	23	CLOX	33	D2ER
4	MCES	14	A5ER	24	WEER	34	D1ER
5	DADE	15	A6ER	25	OEER	35	D0ER
6	CLDE	16	A7ER	26	CEER	36	UNEC
7	SSDE	17	A8ER	27	CLEC	37	DAEC
8	FSDE	18	A9ER	28	DTER	38	GAP
9	A0ER	19	AAER	29	D6ER	39	SMSE
10	A1ER	20	VSS	30	D5ER	40	VDD1

U911: MB88401-P

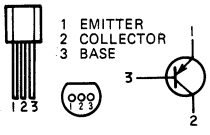


1	R4	12	K_0	22	SC/TO	33	P_0
2	R5	13	K_1	23	SI	34	P_1
3	R6	14	K_2	24	SO	35	P_2
4	R7	15	K_3	25	O_0	36	P_3
5	R8	16	EX	26	O_1	37	R_0
6	R9	17	X	27	O_2	38	R_1
7	R10	18	RESET	28	O_3	39	R_2
8	R11	19	IRQ	29	O_4	40	R_3
9	R12	20	TC	30	O_5	41	V_M
10	R13	21	Vss	31	O_6	42	Vcc
11	R14			32	O_7		

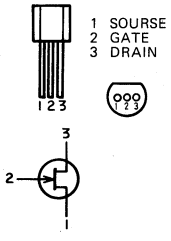
Q511: 2SC828
Q502, Q508, Q509: 2SC945
Q503: 2SC1383
Q104(A~D), Q105, Q106, Q107, Q108: 2SC1674
Q903: 2SC2062
Q111(A·B), Q112(A·B), Q901, Q904, Q906, Q907: 2SC1815



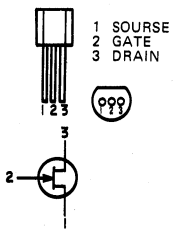
Q101, Q110, Q113(A·B), Q506, Q510, Q902, Q905
Q102: 2SA564 } 2SA1015



Q114(A·B): 2SK121

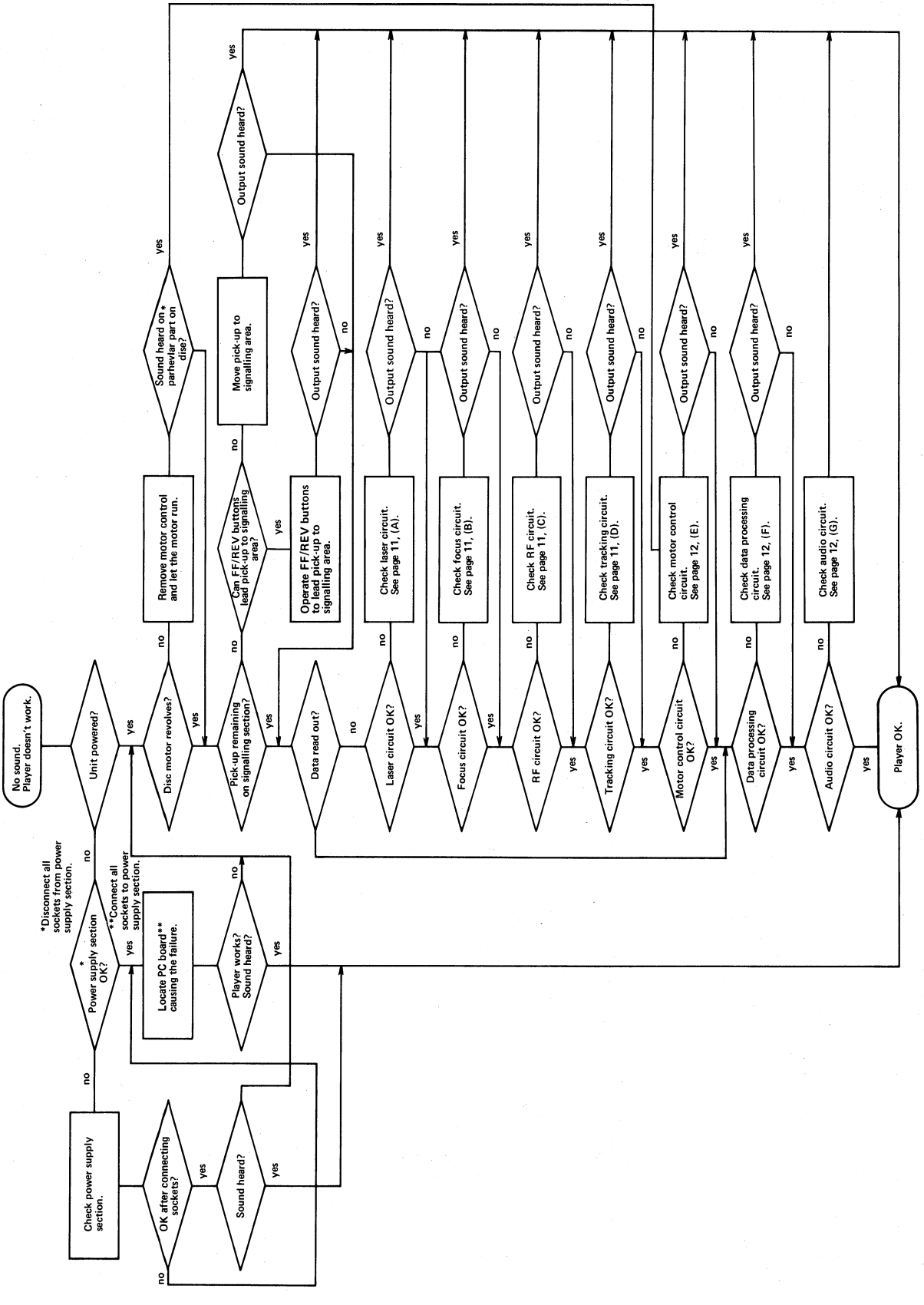


Q109 / Q501: 2SK246

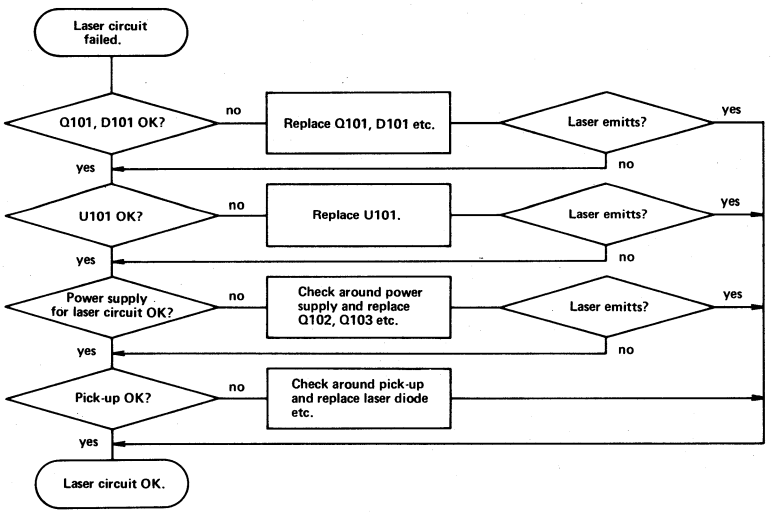


Quick trouble shooting charts

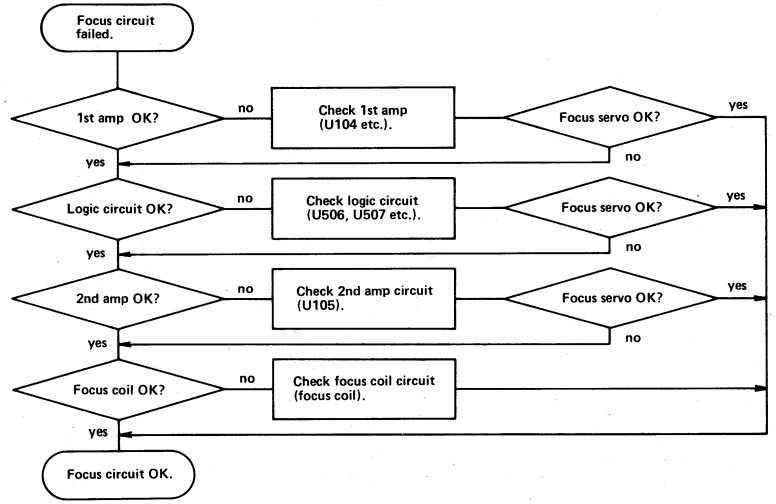
Overall


No sound. Player doesn't work.
Unit powered?
Disc motor revolves?
Pick-up remaining on signalling section?
Data read out?
Laser circuit OK?
Focus circuit OK?
RF circuit OK?
Tracking circuit OK?
Motor control circuit OK?
Data processing circuit OK?
Audio circuit OK?
Player OK.
Remove motor control and let the motor run.
Can FF/REV buttons lead pick-up to signalling area?
Move pick-up to signalling area.
Operate FF/REV buttons to lead pick-up to signalling area.
Sound heard on * parhevlar part on dise?
Output sound heard?
Check laser circuit. See page 11, (A).
Check focus circuit. See page 11, (B).
Check RF circuit. See page 11, (C).
Check tracking circuit. See page 11, (D).
Check motor control circuit. See page 12, (E).
Check data processing circuit. See page 12, (F).
Check audio circuit. See page 12, (G).
*Disconnect all sockets from power supply section.
**Connect all sockets to power supply section.
* Power supply section OK?
Locate PC board** causing the failure.
Player works? Sound heard?
Check power supply section.
OK after connecting sockets?
Sound heard?
yes
no

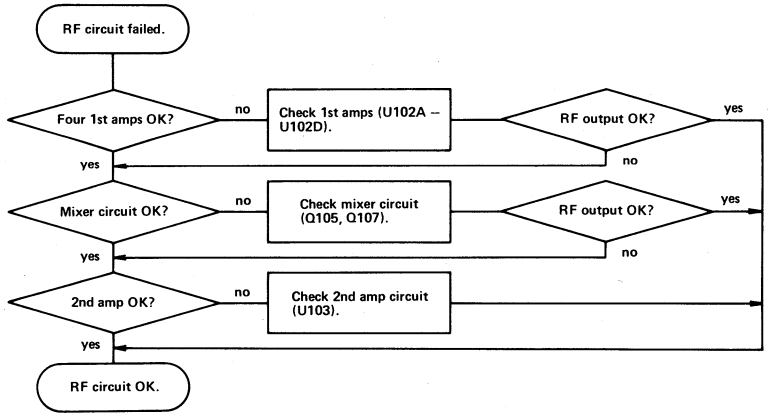
(A) Laser circuit failure



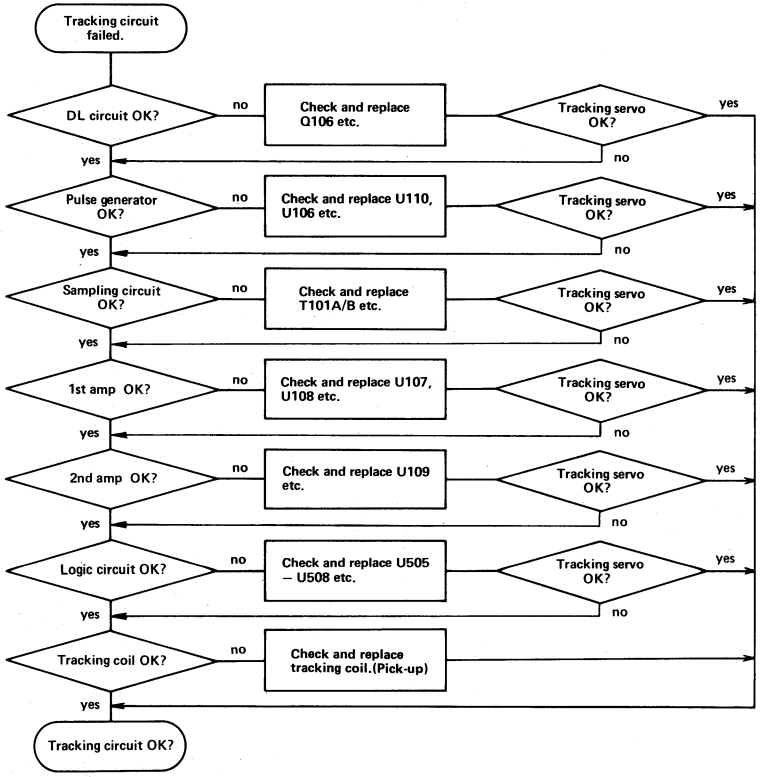
(B) Focus circuit failure



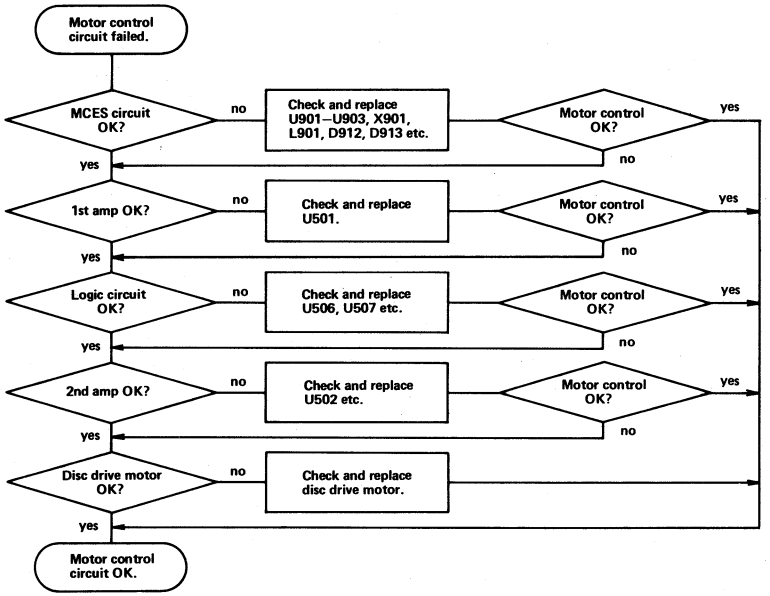
(C) RF circuit failure



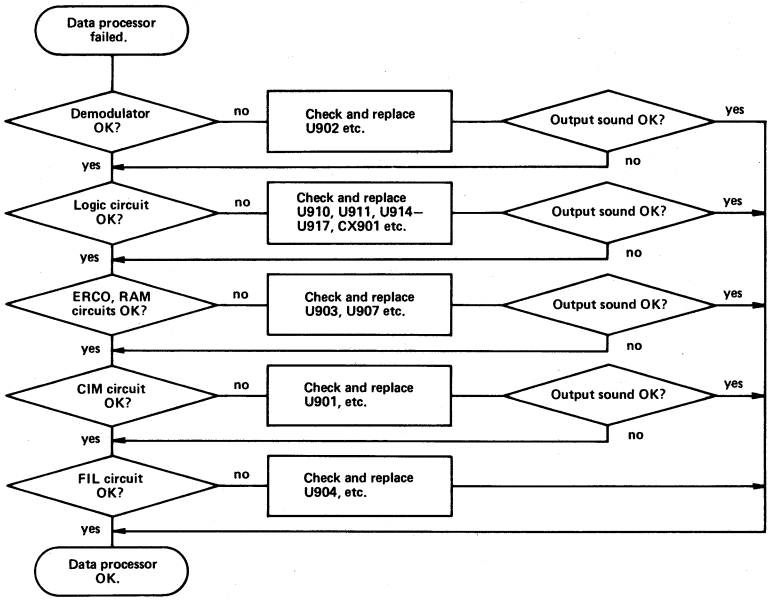
(D) Tracking circuit failure



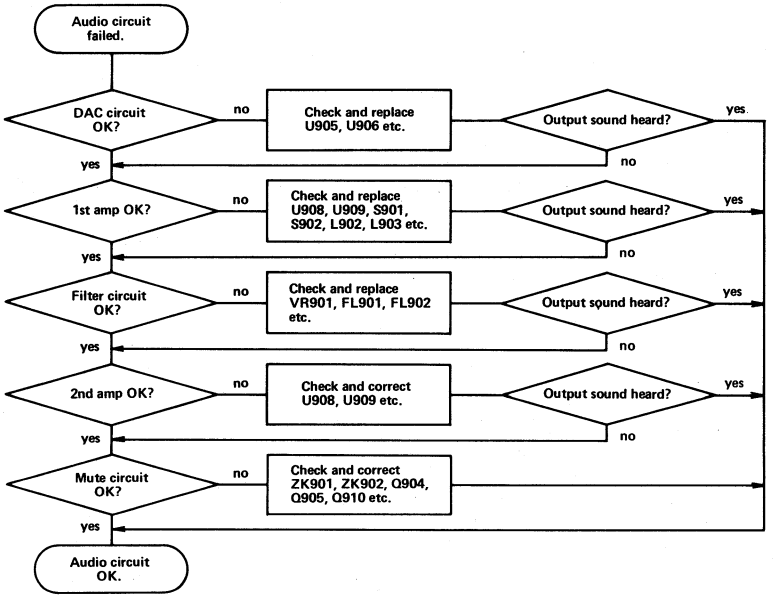
(E) Motor control failure



(F) Data processor Failure

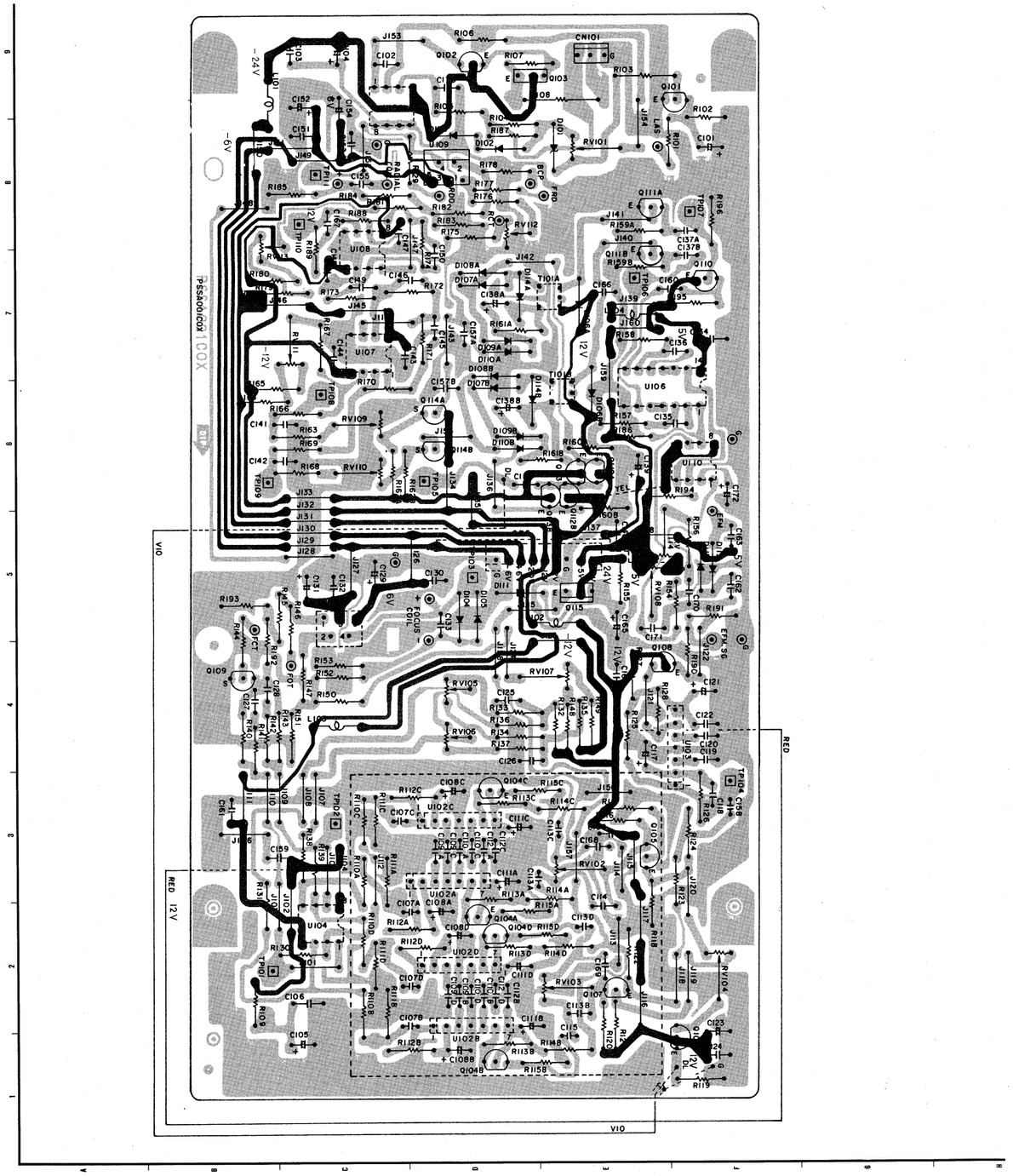


(G) Audio circuit failure

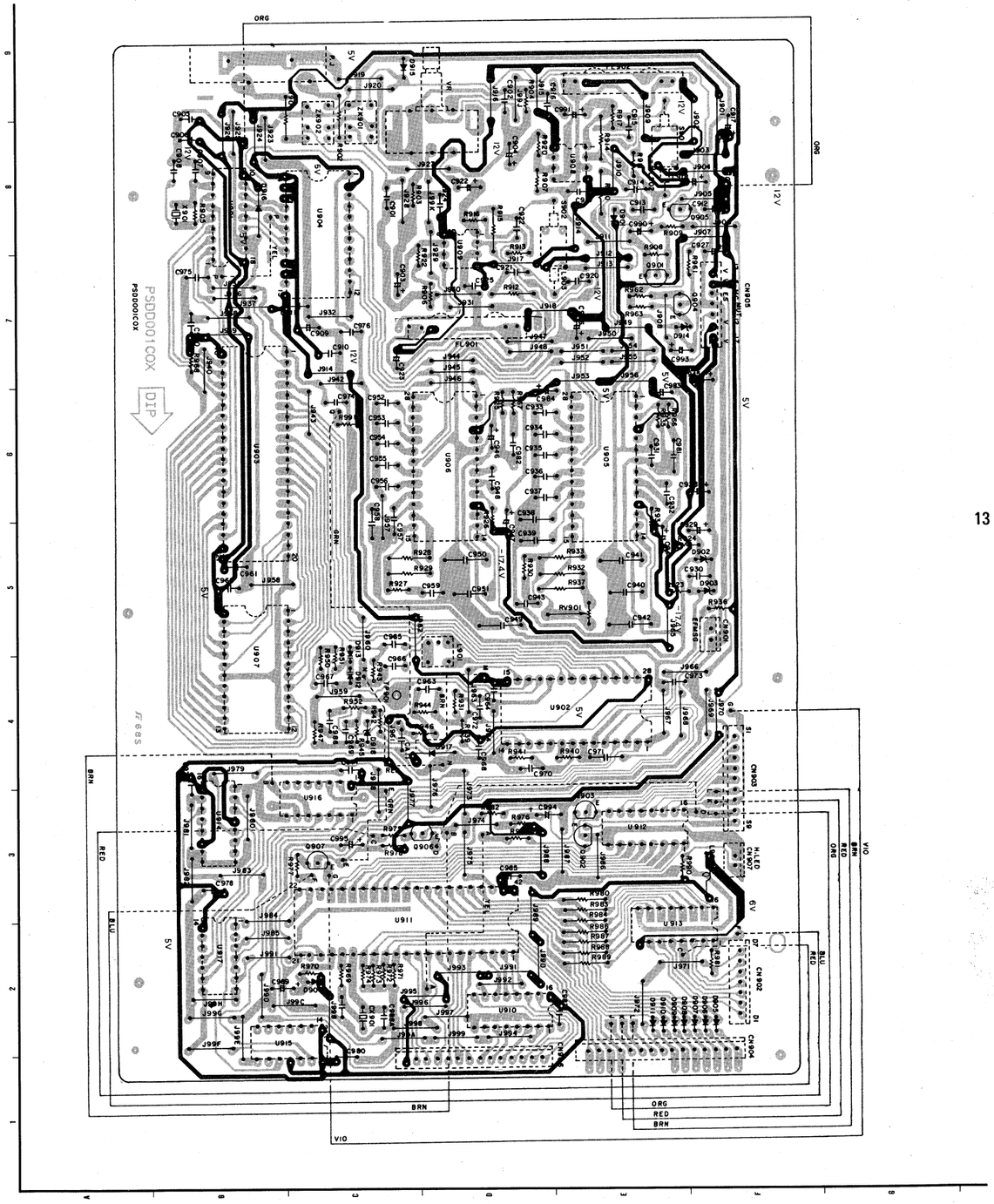


PC board layout

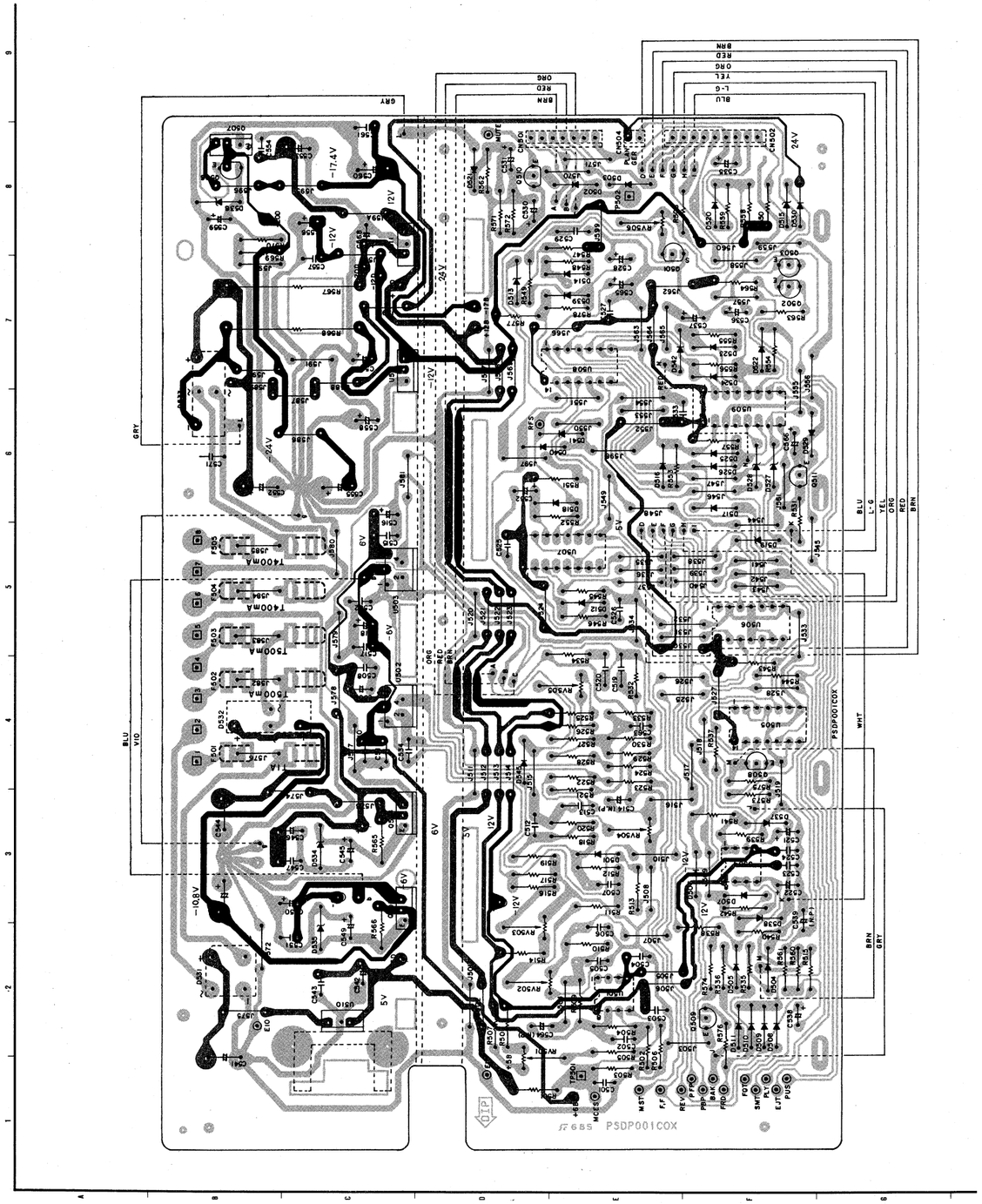
APSSA001BD **See page 22 for part number information.**



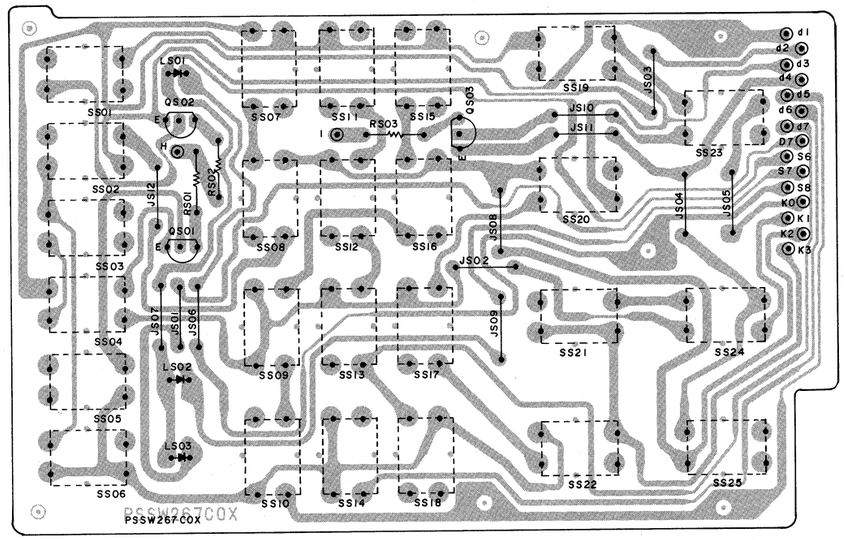
APSDD001DD **See page 21 for part number information.**



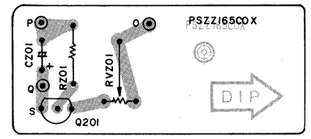
APSDP001AD **See page 21 for part number information.**



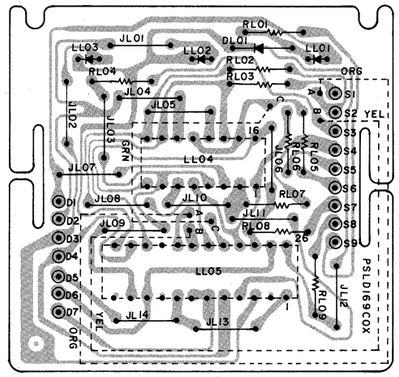
APSSW267AA **See page 22 for part number information.**



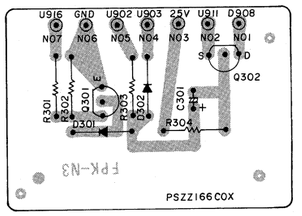
APSZZ165AA **See page 22.**



APSLD169AA **See page 22.**

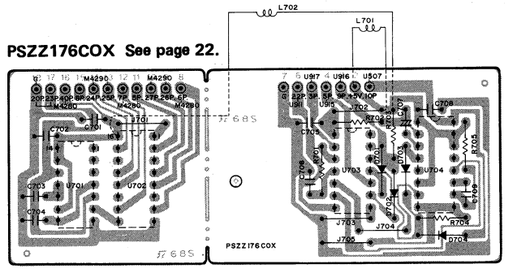


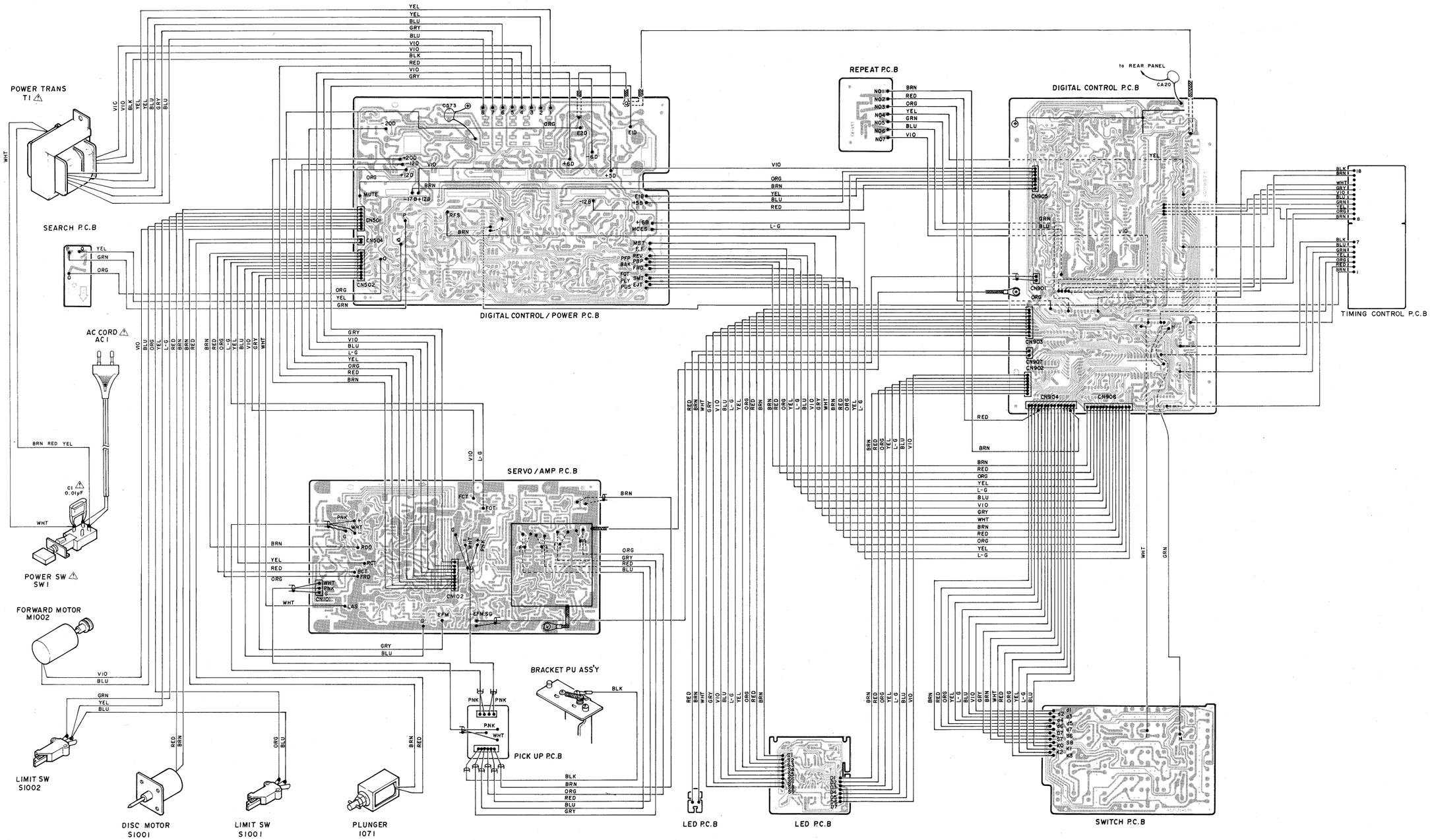
APSZZ166AA **See page 22.**



APSLD173AA **See page 22.**

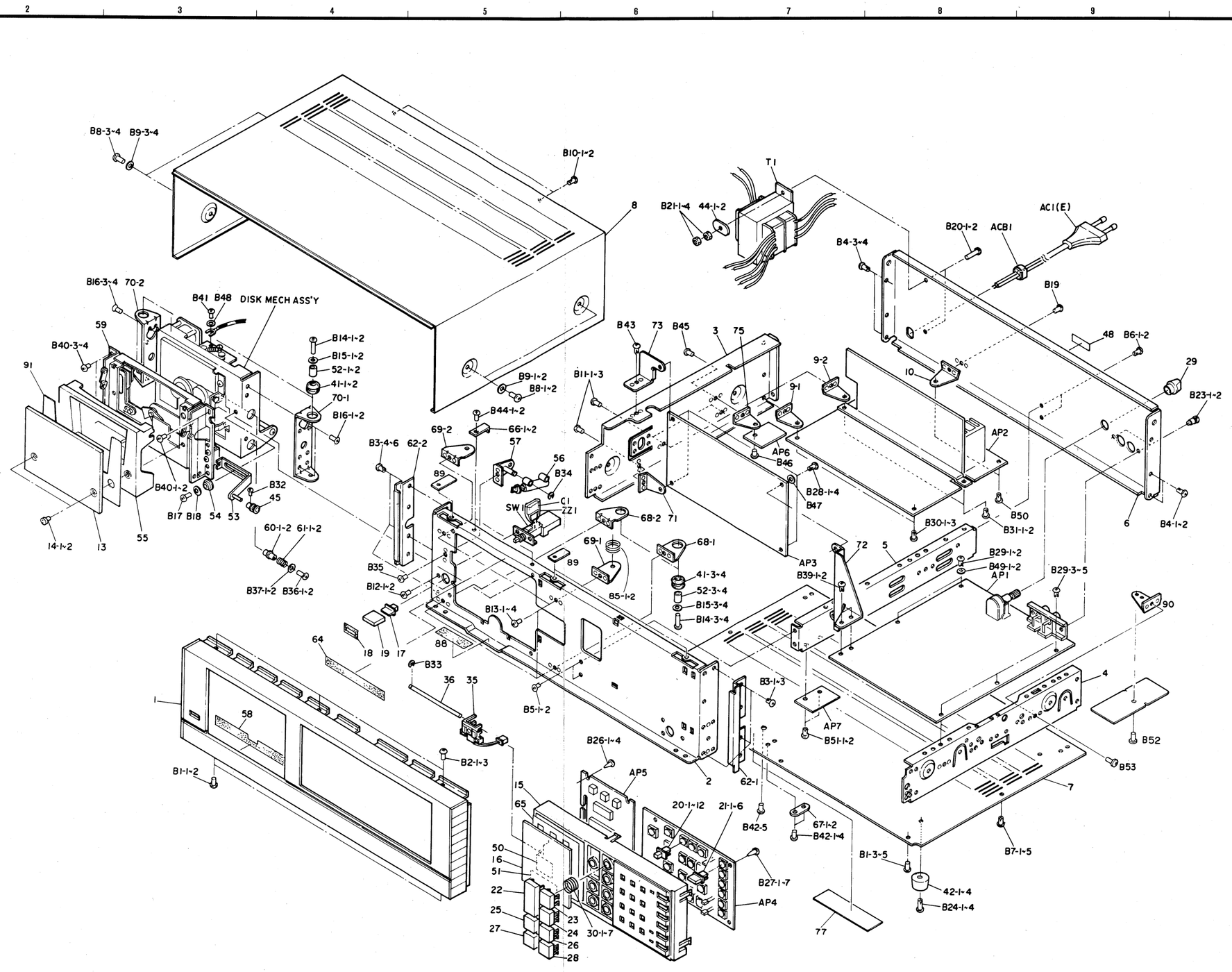
PSZZ176COX **See page 22.**




POWER TRANS
T1
SEARCH P.C.B
AC CORD
AC1
C1
0.01μF
POWER SW
SW1
FORWARD MOTOR
M1002
LIMIT SW
S1002
DISC MOTOR
S1001
LIMIT SW
S1001
PLUNGER
1071
DIGITAL CONTROL / POWER P.C.B
SERVO / AMP P.C.B
PICK UP P.C.B
BRACKET PU ASS'Y
REPEAT P.C.B
DIGITAL CONTROL P.C.B
to REAR PANEL
CA20
TIMING CONTROL P.C.B
LED P.C.B
LED P.C.B
SWITCH P.C.B

Exploded view

Overall



Replacement Part List

Overall

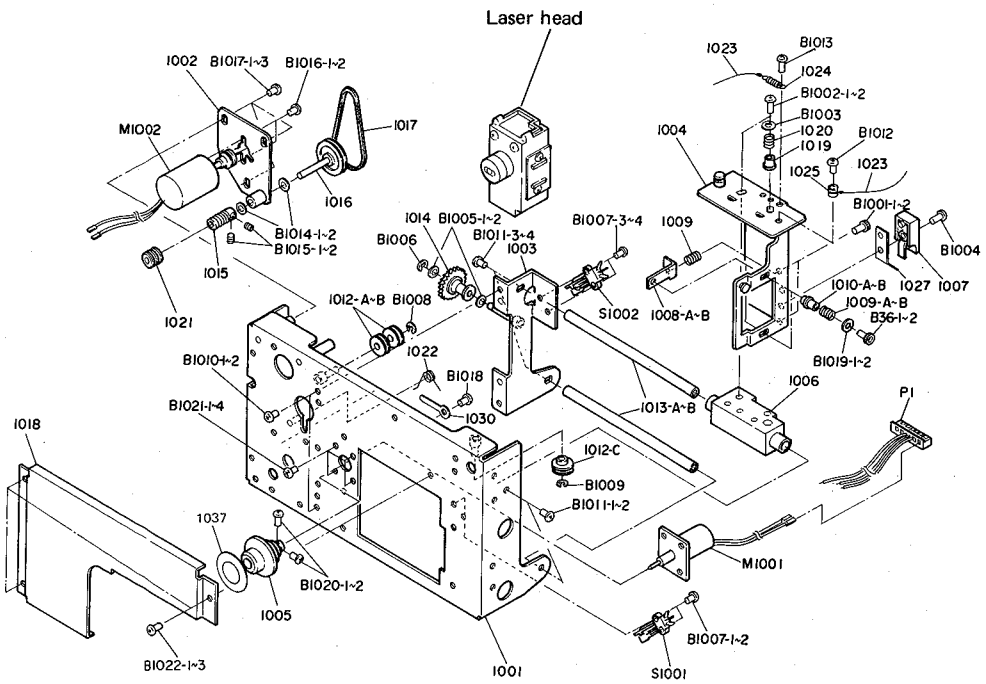
Symbol No.	Description	Part code
1	Escutcheon assembly	AMTAD20001
(1-A	Escutcheon	ME97EAA184)
(1-B	Guide, button	VF131SB002)
(1-C	Side piece L	VS748SM005)
(1-D	Side piece R	VS748SM006)
2	Front panel	MB972SX007
3	Support, chassis left	MB862SX007
4	Support, chassis right	MU852SX012
5	Bracket, power transformer	MB851SX001
6	Rear panel	MB972SE135
7	Cover, bottom	MS986SX026
8	Cover, cabinet	MU897SM021
9	Support, PC board	ML332SX006
10	Support, PC board	ML321SL001
13	Compartment, disc	VS768AS009
14	Screw	MT163AA001
15	Frame	VE86JSM042
16	Escutcheon, indicator	VS668AK003
17	Spacer, button	VN220SN001
18	Spacer, button	VS215FB001
19	Push button POWER	VN220SP022
20	Button	VN210SX006
21	Button	VN230SX002
22	Button PLAY	VN250SM002
23	Button STOP/EJECT	VN230SM024
24	Button	VN230SM011
25	Button SKIP (reverse)	VN230SM025
26	Button SKIP (forward)	VN230SM026
27	Button REV	VN230SM027
28	Button FF	VN230SM028
29	Knob LEVEL	VN276SM052
30	Spring	MW371LY001
35	Holder LED	VX222SB001
36	Rod	MT632SB001
41	Absorbor	VM277RB004
42	Pedestal	VM283RB001
44	Plate	MS317SZ006
45	Holder, guide	MT163BD015
48	Decal	VVL511GE20
50	Filter	VS335CS001
51	Filter, indicator	VS525CS001
	HEAD LOCATION	
52	Shaft, pulley	MT264BD011
53	Bracket assembly, LED	AVBRCKT013

Symbol No.	Description	Part code
(53-A	Bracket LED	MU163SL001)
(53-B	Pin, guide	MT232LD001)
54	Guide	MT155BD001
55	Cover	VB763SB009
56	Damper, air	ZZZ0000195
57	Damper, bracket	ML332SX008
58	Sheet	VS713YB001
59	Loading assembly, page 20	AVL0ADG001
60	Guide	MT164BD027
61	Spring	MW151LY007
62	Cover	MZ721SL003
64	Sheet	VS615YB002
65	Sheet, indicator	VS662XF002
66	Plate, locking	ML121SX003
67	Plate, locking	AVBRCKT014
78	Bracket	ML341SX002
69	Bracket	ML341SX003
70	Bracket	MU363SX003
71	Bracket, PC board	ML241SX005
72	Bracket, PC board	MX765SX001
73	Bracket, PC board	ML243SX002
75	Bracket, PC board	ML321SX002
77	Decal CAUTION	VVL631WN28
83	Clamp	MX415SZ001
84	Clamp	MX615SZ001
85	Spring	MW371LY003
88	Sheet panel	VS566CB001
89	Spacer	MS316SX004
90	Support, PC board	ML322SX003
91	Plate lid	MS765AA015
B1	Screw M3/8	BTPP3008TZ
B2	Screw M3/8	BTPP3008TZ
B3	Screw M3/8	BTPW3008BZ
B4	Screw M3/8	BTPL3008BB
B5	Screw M3/8	BTPW3008BZ
B6	Screw M3/8	BTPB3008BB
B7	Screw M3/8	BTPW3008BZ
B8	Screw M5/10	BSPB5010NB
B9	Washer 5mm	BWM50C08SB
B10	Screw M3/8	BTPL3008BB
B11	Screw M3/6	BSPC3006NZ
B12	Screw M3/6	BSPC3006NZ

Symbol No.	Description	Part code
B13	Screw M3/6	BSPC3006NZ
B14	Screw M3/18	BSPP3018NZ
B15	Washer 3mm	BWM30A08SZ
B16	Screw M3/6	BTPS3006TZ
B17	Screw M3/8	BTPP3008TZ
B18	Washer 3mm	BWM30A08SZ
B19	Screw M3/6	BSPB3006NB
B20	Screw M4/16	BSPB4016NB
B21	Nut	BNHCL40NSZ
B23	Rivet 3.5/5.5	BRP3555QNB
B24	Screw M3/10	BTPW3010BZ
B26	Screw M2.6/6	BTPP2606AZ
B27	Screw M2.6/6	BTPP2606AZ
B28	Screw M3/8	BTPW3008BJ
B29	Screw M3/8	BTPW3008BJ
B30	Screw M3/8	BTPW3008BZ
B31	Screw M3/8	BTPW3008BZ
B32	Screw hex M2.6/4	BVHK2604NB
B33	Ring E2	BCE2040XLD
B34	Washer	VS403XN002
B35	Screw M3/6	BSPC3006NZ
B36	Screw M3/10	BSHM3010NB
B37	Washer 3mm	BWM30805SZ
B38	Rivet 3/4.5	BRP3045QNB

Symbol No.	Description	Part code
B39	Screw M3/8	BTPW3008BJ
B40	Screw M3/6	BTPP3006TZ
B41	Screw M2/4	BSPP2004NZ
B42	Screw M3/8	BSPB3008N2
B43	Screw M3/8	BTPW3008BZ
B44	Screw M3/6	BSPP3006NZ
B45	Screw M3/6	BSPC3006NZ
B46	Screw M3/8	BTPW3008BZ
B47	Washer 3mm	BWG30655SW
B48	Washer 2mm	BWG20483SW
B49	Washer 3mm	BWG30655SW
B50	Screw M3/8	BTPW3008BJ
B51	Screw M3/8	BTPW3008BZ
B52	Screw M3/8	BTPW3008BZ
B53	Screw M3/6	BSPC3006NZ
ACB1	Strain relief	VM270NB004
AC1	AC cord assembly	ACAC035EEA
C1	Capacitor, polyester	CQHZ103MEN
SW1	Switch, POWER ESB-70702V	SP01AAW01N
T1	Transformer, power 220V SEMKO/VDE	TPG65S001P
ZZ1	Protective cover, C1	VX331VL001

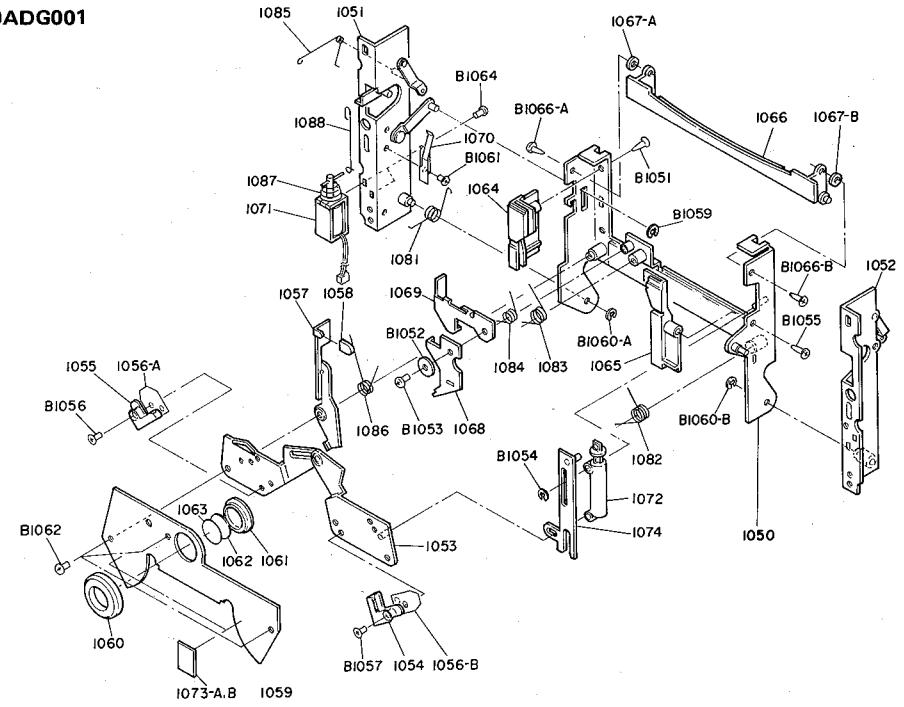
Player mechanism assembly: AJV0ML001S



Symbol No.	Description	Part code
S1001/1002	Switch, limit	SZ010202ZE
1001	Chassis assembly	AVCHASS001
1002	Chassis assembly MA	AVBRCKT010
1003	Bracket assembly guide	AVBRCKT011
1004	Bracket assembly PU	AVBRCKT012
1005	Table assembly	AVTABLE001
1006	Bearing A	VB632DX001
1007	Guide slide	VK221DN001
1008	Bracket, PU adjust	ML232SL006
1009	Spring, PU adjust	MW151LY006
1012	Pully S	MT162BD002
1013	Shaft, guide	MT763LY001
1014	Gear A	VM286DN001
1015	Gear B	MT263BD013
1016	Pulley assembly	AVPULLY004
1017	Belt	VM180RB009
1018	Trim plate	MC761SX001
1019	Bushing rad	MT164BD028
1020	Spring B	MW151LY007
1021	Gear, collar	MW160BD002
1022	Gear, spring	MW164LY001
1023	String	VWX01XX002
1024	Spring, string	MW151LY008
1025	Collar, string	MT150BD001
1027	Spring slide	MS312LY001
1030	Clamp	MX215SN002
1037	Sheet	VS802RF001

Symbol No.	Description	Part code
B1005	Poly washer 2.1/4.0/0.25T	BWK20403KU
B1001	Screw M3/8	BSHM3008NB
B1002	Screw M3/12	BSPB3012NZ
B1003	Washer 3mm	BWM30605SZ
B1004	Screw M3/12	BTPP3012TZ
B1006	Ring E1.5/0.4	BCE1540XLD
B1007	Screw M2/8	BSPB2008NZ
B1008	Ring E1.5/0.4	BCE1540XLD
B1009	Ring E1.5/0.4	BCE1540XLD
B1010	Screw M3/5	BSPB3005NZ
B1011	Screw M3/8	BSPC3008NZ
B1012	Screw M3/8	BTPP3008TZ
B1013	Shaft pulley	MT142SN001
B1014	Poly washer 2.6/4.7/0.25T	BWK25473KU
B1015	Screw M2/3	BVMF2003NZ
B1016	Screw M2/4	BSPB2004NZ
B1017	Screw M2.6/5	BSPB2605NZ
B1018	Screw M2.6/3	BTPP2603TB
B1020	Screw M2.3/3	BTPP2303NZ
B1021	Screw M3/5	BSPB3005NZ
B1022	Screw 2.6/3	BTPP2603TB
M1001	Motor CCL-1843A-01	ZNM0041501
M1022	Motor LS22-AA	ZNM0064501
	Laser head	HLPL030010
P1	Cord assembly	ACCNB12GEA

Loading assembly: AVL0ADG001



Symbol No.	Description	Part code	Symbol No.	Description	Part code
1050	Holder assembly	AVH0LDR002	1074	Plate, slide	MS646SL001
1051	Bracket assembly, right	AVBRCKT008	1081	Spring, door	MW161LY007
1052	Bracket assembly, left	AVBRCKT009	1082	Spring, arm	MW161LY008
1053	Arm assembly	AVARM**003	1083	Spring B	MW141LY003
1054	Roller, right	VM166DB001	1084	Spring C	MW161LY009
1055	Roller, left	VM166DB002	1085	Spring D	MW141LY004
1056	Roller, sheet	VS222KJ001	1086	Spring E	MW131LY002
1057	Lever, safety	ML631SL007	1087	Spring F	MW261LY008
1058	Sensor	VB111DB001	1088	Rod	MW501LY0
1059	Plate	MS747SL001	B1051	Screw M3/10	BTPS3010AB
1060	Chuck A	VM187SB002	B1052	Washer 3.4/12/0.8T	BWM30C08SZ
1061	Chuck B	VM187SB003	B1053	Screw M2.6/5	BSPB2605NZ
1062	Plate	MS707SZ003	B1054	Ring E1.5/0.4	BCE1540XLD
1063	Sheet, chuck	VS702KJ001	B1055	Screw M3/8	BTPP3008AB
1064	Guide right	VX431DB001	B1056/1057	Screw M2.6/12	BSPS2612NZ
1065	Guide left	VU611DB001	B1059/1060	Ring E/0.5	BCE3050XLD
1066	Cover, top	VB721SB001	B1061	Screw M2/3	BSPB2003NZ
1067	Collar, top cover	MT140BD003	B1062	Screw M2.6/5	BSPB2605NZ
1068	Plate, locking B	MS536SL002	B1064	Screw M2/2.5	BS022025NB
1069	Plate, locking C	ML441SL001	B1066	Screw M2.6/8	BTPP2608AB
1070	Spring, kick	ML311LD001			
1071	Solenoid P120ZB-1	ZSA163201U			
1072	Damper, air	ZZZ0000196			
1073	Plate, sheet	VS327SF001			

PC board assembly: APSDD001AD

Resistors unit in ohm, 1/4W, 5% (U.O.N.)

Symbol No.	Description	Part code
CA	Ceramic vibrator KBR-4.4M	CX4400001%
CA00-10	Capacitor, chip 4700p 50V	CFHD472KB%
C901/902	Capacitor, styroflex 1000p 125V	CQTC102JEB
C915	Capacitor, styroflex 2200p 100V	CQSC222JCF
C922	Capacitor, styroflex 2200p 100V	CQSC222JCF
C996-999	Capacitor chip, 4700p 50V	CFHD472KB%
D901	Diode MA150	QDSMA150XN
D902	Diode RD5.1EB1	QDZ5R1EB1A
D903	Diode RD2.4EC	QDZ2R4ECXA
D904-911	Diode MA150	QDSMA150XN
D912/913	Diode SVC321SP	QDCVC321CC
D914	Diode RD5, 1EB1	QDZ5R1EB1A
D915/916	Diode MA150	QDSMAK50XN
D917	Diode EM1Z	QDSEM1ZXXD
D918	Diode RD5.1EB1	QDZ5R1EB1A
FL901/902	Filter, low-pass F120B	FERR20L01U
J901	Socket 2-pin	YJP02S015U
J902	Socket, IC	YSC420002U
L901	RFC, VCO 208301020	TR07QP001S
L902/903	AFC, read	LHHZV04ZZZ
L904	AFC	LF100KE03Y
Q901	Transistor 2SC1815	QTC1815XBT
Q902	Transistor 2SA1015	QTA1015XDT
Q903	Transistor 2SC2062	QTC2062XAX
Q904	Transistor 2SC1815	QTC1815XBT
Q905	Transistor 2SA1015	QTA1015XDT
Q906/907	Transistor 2SC1815	QTC1815XBT
RV901	VR, 200B	PR1NB20101
R910	Resistor, metal-oxide 820	RQBNJ8200X
R912	Resistor, metal-oxide 820	RQBNJ8200X
R914/915	Resistor, metal-oxide 1.8K	RQBNJ1801X
R924	Resistor, metal-oxide 120 1W	RG1ANJ121B
R928	Resistor, metal-oxide 82 2%	RQBNG0820X
R929	Resistor, metal-oxide 620	RQBNG6200X
R932	Resistor, metal-oxide 270 2%	RQBNG2700X
R933	Resistor, metal-oxide 82 2%	RQBNG0820X
R937	Resistor, metal-oxide 560 2%	RQBNG5600X
S901/902	Switch, reed FDR-4H	SZ010110Z6
U901	IC SAA7000	QQMA7000AZ
U902	IC SAA7010	QQMA7010AZ
U903	IC SAA7020	QQMA7020AZ
U904	IC SAA7030	QQMA7030AZ
U905/906	IC TDA1540	QQMA1540AZ
U907	IC TMN2016P	QQNM2016AT
U908/909	IC TL072CP	QQM00072BU
U910	IC TC4028BP	QQ004028AT
U911	IC MB8841	QQNC1001AF
U912	IC M54517P	QQM54517PE
U913	IC BA618	QQMBA618AX
U914	IC M74LS193P	QQT74193AE
U915	IC SN74LS74AN	QQT07474AU
U916	IC SN74LS04N	QQT07404AU
U917	IC SN74LS11N	QQT07411AU
VR901	VR, 1 kB	RVQA102B02
X901	Crystal osc 4.2336 MHz	XAZ1C3001X
ZK901/902	Relay FBR22	ZRA133107Z

PC board assembly: APSDP001CD

Symbol No.	Description	Part code
D501	Diode MA150	QDSMA150XN
D502/503	Diode EM1Z	QDSEM1ZXXD
D504-512	Diode MA150	QDSMA150XN
D513	Diode RD5.1EB1	QDZ5R1EB1A
D514	Diode MA150	QDSMA150XN
D515	Diode RD5.1EB1	QDZ5R1EB1A
D516–518	Diode MA150	QDSMA150XN
D519	Diode RD5.1EB1	QDZ5R1EB1A
D520-526	Diode MA150	QDSMA150XN
D527/528	Diode RD5.1EB1	QDZ5R1EB1A
D529	Diode MA-27T-B	QDSMA27TBN
D530	Diode MA150	QDSMA150XN
D531	Diode S2VB	QDSS2VBXXK
D532/533	Diode S1RBA	QDSS1RBAXK
D534/535	Diode RD6.8EB2	QDZ6R8EB2A
D536	Diode MA1180M	QDZA1180MN
D537-545	Diode MA150	QDSMA150XN
Q501	Transistor 2SK246	QTK0246XAT
Q502	Transistor 2SC945	QTC0945XBA
Q503	Transistor 2SC1383	QTC1383XCN
Q504	Transistor 2SD313	QTD0313XDC
Q505	Transistor 2SA768	QTA0768XBD
Q506	Transistor 2SA1015	QTA1015XDT
Q507	Transistor 2SA768	QTA0768XBD
Q508/509	Transistor 2SC945	QTC0945XBA
Q510	Transistor 2SA1015	QTA1015XDT
Q511	Transistor 2SC828	QTC0828XBN
RV501	VR 2 kB	RP1NB20201
RV502	VR 10 kB	RP1NB10301
RV503	VR 5 kB	RP1NB50201
RV504/505	VR 10 kB	RP1NB10301
RV506	VR 5 kB	RP1NB50201
R567/568	Resistor, metal-oxide 22 3W	RX3ARJ220B

Symbol No.	Description	Part code
U501	IC NJM4558D	QQM04558AJ
U502/503	IC UP1238V	QQM01238AA
U504	IC NJM4558D	QQM04558AJ
U505/506	IC TC4066BP	QQ004066BT
U507	IC TC4009BP	QQ004009AT
U508	IC TC4011UBP	QQ004011DT
U509	IC TC4009BP	QQ004009AT
U510	ICUA7805UC	QQM07805A4
U511	IC UA7812UC	QQM07812A4
U512	IC UA7912UC	QQM07912A4

PC board assembly: APSSA001AD

Symbol No.	Description	Part code
D101	Diode MA1082M	QDZA1082MN
D102/103	Diode MA150	QDSMA150XN
D104/105	Diode EM1Z	QDSEM1ZXXD
D106–110	Diode MA150	QDSMA150XN
D111	Diode RD15EB1	QDZ150EB1A
D112–114	Diode MA150	QDSMA150XN
L101–104	RFC	LF100KE03Y
Q101	Transistor 2SA1015	QTA1015XDT
Q102	Transistor 2SA564A	QTA0564ACN
Q103	Transistor 2SA794	QTA0794XAN
Q104–108	Transistor 2SC1674	QTC1674XBA
Q109	Transistor 2SK246	QTK0246XAT
Q110	Transistor 2SA1015	QTA1015XDT
Q111–112	Transistor 2SC1815	QTC1815XAT
Q113	Transistor 2SA1015	QTA1015XDT
Q114	Transistor 2SK121	QTK0121XAS
Q115	Transistor 2SD313	QTD0313XDC
RV101–104	VR 10 kB	RP1NB10301
RV105–106	VR 1 kB	RPJNB10210
RV107	VR 2 kB	RP1NB20201
RV108	VR 10 kB	RP1NB10301
RV109–111	VR 2 kB	RP1NB20201
RV112	VR 10 kB	RPJNB10310
RV113	VR 10 kB	RPFNB10301
RV114	VR 10 kB	RP1NB10301
R103	Resistor, metal-oxide 4.7k 1/2W	RGHANJ472B
R108	Resistor, metal-oxide 180 1W	RG1ANJ181B
T101	Transformer, pulse	LWD2R8001S
U101	IC NJM4558D	QQM04558AJ
U102–103	IC TA7302P	QQM07302AT
U104	IC NJM4558D	QQM04558AJ
U105	IC UP1238V	QQM01238AA
U106	IC SN74LS04N	QQT07404AU
U107/108	IC NJM4558D	QQM04558AJ
U109	IC UP1238V	QQM01238AA
U110	IC LA1222	QQMA1222AC

PC board assembly: APSZZ166AA

Symbol No.	Description	Part code
D301/302	Diode MA150	QDSMA150XN
Q301	Transistor 2SC945	QTC0945XBA
Q302	Transistor 2SK68	QTK0068XBA

PC board assembly: APSLD169AA

Symbol No.	Description	Part code
DL01	Diode MA150	QDSMA150XN
LL01	LED LD-101UR red	QLALD101RX
LL02	LED LD-101DU	QLALD101UX
LL03	LED LD-101GG green	QLAD101GX
LL04	LED GL-7H202	QL*L7H2023
LL05	LED LC-204MB green	QL#LC204MX

PC board assembly: APSLD173AA

Symbol No.	Description	Part code
LL06	LED AR2222S	QLAAR2222R

PC board assembly: APSSW267AA

Symbol No.	Description	Part code
LEDS01–03	LED TLR205 red	QLATLR205T
QS01–03	Transistor 2SA1015	QTA1015XCT
SS01–18	Switch, key KHC10906	SK0101X11A
SS19–25	Switch, key KHC10902	SK0101X05A

PC board assembly: APSZZ165AA

Symbol No.	Description	Part code
QZ01	Transistor 2SK246	QTK0246XAT
RVZ01	VR 5 kB	RP1NB50201

PC board assembly: APSZZ176AA

Symbol No.	Description	Part code
D701–704	Diode MA150	QDSMA150XN
U701	IC SN74LS86N	QQT07486AU
U702	IC M74LS175P	QQT74175AE
U703	IC SN74LS04N	QQT07404AU
U704	IC SN74LS221N	QQT74221AU

Accessories		Part code
	Manual, operation original	KTTAD200XX
	Carton	KPTAD20001
	Audio cable set	ACPP007ULA

TAD-2000 Compact Disc Digital Audio Player